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## (54) COLOR IMAGE FORMING DEVICE

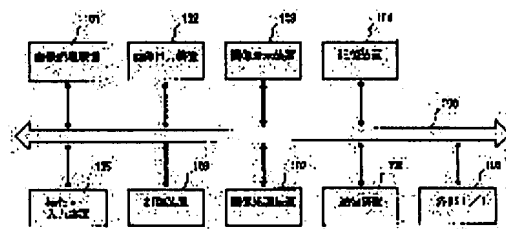
### (57)Abstract:

**PURPOSE:** To allow the operator to imagine easily a modified output picture by defining the impression of the output picture changed through combination of plural color adjustment parameters in a sensual word as a color psychological parameter so as to eliminate complicated setting for color adjustment and to improve the operation convenience.

**CONSTITUTION:** Upon the receipt of RGB data, a picture processing unit 107 converts the data into  $L^*a^*b^*$  of a uniform color space CIELAB. A storage device 104 inputs a corresponding series of processing (combination of plural color adjustment parameters)

based on a color psychological parameter designated by the user and executes a series of processing by a main

processing section of color adjustment, revised  $L^*a^*b^*$  are converted into  $R' G' B'$  data. The processing unit 107 executes color adjustment processing based on the color psychological parameter in this step. When the psychological parameter stored in the device 104 is displayed on the device 107 and the user selects a desired color parameter via the device 105, the processing unit 107 executes the color adjustment processing to display the parameter on a display device 103.



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**CLAIMS**

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[Claim(s)]

[Claim 1] The color mental parameter which defined by sensuous language the impression of the output image which changes with said combination when the combination of two or more color tone ready parameters was specified, The storage means which the combination of two or more of said color tone ready parameters was made to correspond, and memorized it, Color picture formation equipment characterized by having a color tone ready activation means to perform combination of two or more color tone ready parameters memorized by the color mental parameter specified with the assignment means and said assignment means for specifying said color mental parameter, and said storage means to correspond.

[Claim 2] The color mental parameter which defined by sensuous language the impression of the output image which changes with said combination when the combination of two or more color tone ready parameters was specified, A storage means to make the combination of two or more of said color tone ready parameters correspond, and to memorize it, A color tone ready activation means to perform combination of two or more color tone ready parameters memorized by the color mental parameter specified with the assignment means and said assignment means for specifying said color mental parameter, and said storage means to correspond, Assignment of association of two or more color mental parameters memorized by said storage means or one color mental parameter as a combination of two or more color mental parameters Association / separation assignment means for specifying the separation, when defining, When association of a color mental parameter is specified through said association / separation assignment means, the combination of two or more color tone ready parameters corresponding to two or more specified color mental parameters as one processor When make it join together, said storage means is made to memorize as a new color mental parameter and separation of a color mental parameter is specified, the combination of the separated color mental parameter with the combination of two or more color tone ready parameters corresponding to it Color picture formation equipment characterized by having association / separation processing means which said storage means is made to memorize.

[Claim 3] The color mental parameter which defined by sensuous language the impression of the output image which changes with said combination when the combination of two or more color tone ready parameters was specified, The storage means which the combination of two or more of said color tone ready parameters was made to correspond, and memorized it, The study selection means which takes the hysteresis of the color mental parameter specified in order to process the description data of an input image, and its input image, learns combination, and chooses a color mental parameter automatically with incorporation of an image, The assignment means for specifying any of the color mental parameter memorized by the color mental parameter chosen with said study selection means, and said storage means they are, Color picture formation equipment characterized by having a color tone ready activation means to perform combination of two or more color tone ready parameters memorized by the color mental parameter specified with said assignment means, and said storage means to correspond.

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[Translation done.]

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**DETAILED DESCRIPTION**

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[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to the color picture formation equipment which raised the convenience of color adjustment, such as concentration of R, G, B, Y, M, and C, and a gamma table, contrast, in the detail more about color picture formation equipments, such as a color printer treating a color picture, color facsimile equipment, a color digital copier, and a color digital compound machine.

[0002]

[Description of the Prior Art] In recent years, color picture formation equipments, such as a color printer, color facsimile equipment, a color digital copier, and a color digital compound machine having these functions, are spreading widely by documents, such as office, and colorization of various manuscripts progressing quickly from progress of a color picture processing technique, and low-cost-izing of various devices and a rise of still more social needs.

[0003] When performing color adjustment in these color picture formation equipments conventionally, a manuscript is seen, and a user visualizes an image to output and is adjusting complicated parameters, such as red, blue, green, cyanogen, a Magenta, the concentration of each yellow and a gamma table, and contrast.

[0004]

[Problem(s) to be Solved by the Invention] However, since it was necessary to adjust complicated parameters, such as red, blue, green, cyanogen, a Magenta, the concentration of each yellow and a gamma table, and contrast, in order to have obtained the desired image according to the above-mentioned Prior art to adjust an output image to a favorite color, there were a certain amount of experience and a trouble that the level of skill was required.

[0005] Moreover, although the output image needed to be predicted and the complicated parameter needed to be adjusted, since correspondence with modification of a parameter and change of an output image was unclear, there were a trouble of being user-unfriendly, and a trouble that a setup took time amount.

[0006] While this invention is made in view of the above, losing a complicated setup of color adjustment, improving user-friendliness and enabling it to set up quickly, as change of a color tone ready backward output image can be easily imagined at the time of color adjustment, it aims at enabling it to obtain a favorite image simply.

[0007]

[Means for Solving the Problem] The color mental parameter which defined by sensuous language the impression of the output image which changes with said combination when the combination of two or more color tone ready parameters was specified, in order that this invention might attain the above-mentioned purpose, The storage means which the combination of two or more of said color tone ready parameters was made to correspond, and memorized it, Color picture formation equipment equipped with a color tone ready activation means to perform combination of two or more color tone ready parameters memorized by the color mental parameter specified with the assignment means and said

assignment means for specifying said color mental parameter and said storage means to correspond is offered.

[0008] Moreover, the color mental parameter which defined by sensuous language the impression of the output image which changes with said combination when the combination of two or more color tone ready parameters was specified, in order that this invention might attain the above-mentioned purpose, A storage means to make the combination of two or more of said color tone ready parameters correspond, and to memorize it, A color tone ready activation means to perform combination of two or more color tone ready parameters memorized by the color mental parameter specified with the assignment means and said assignment means for specifying said color mental parameter, and said storage means to correspond, Assignment of association of two or more color mental parameters memorized by said storage means or one color mental parameter as a combination of two or more color mental parameters Association / separation assignment means for specifying the separation, when defining, When association of a color mental parameter is specified through said association / separation assignment means, the combination of two or more color tone ready parameters corresponding to two or more specified color mental parameters as one processor When make it join together, said storage means is made to memorize as a new color mental parameter and separation of a color mental parameter is specified, the combination of the separated color mental parameter with the combination of two or more color tone ready parameters corresponding to it Color picture formation equipment equipped with association / separation processing means which said storage means is made to memorize is offered.

[0009] Moreover, the color mental parameter which defined by sensuous language the impression of the output image which changes with said combination when the combination of two or more color tone ready parameters was specified, in order that this invention might attain the above-mentioned purpose, The storage means which the combination of two or more of said color tone ready parameters was made to correspond, and memorized it, The study selection means which takes the hysteresis of the color mental parameter specified in order to process the description data of an input image, and its input image, learns combination, and chooses a color mental parameter automatically with incorporation of an image, The assignment means for specifying any of the color mental parameter memorized by the color mental parameter chosen with said study selection means, and said storage means they are, Color picture formation equipment equipped with a color tone ready activation means to perform combination of two or more color tone ready parameters memorized by the color mental parameter specified with said assignment means and said storage means to correspond is offered.

[0010]

[Function] When the color picture formation equipment (claim 1) of this invention specifies the combination of two or more color tone ready parameters, the contents of color adjustment can imagine it easily from a color mental parameter (sensuous language) by sensuous language defining the impression of the output image which changes with said combination as a color mental parameter. If a desired color mental parameter is specified, combination of the specified color mental parameter and two or more corresponding color tone ready parameters will be performed, and a desired output image will be obtained.

[0011] Moreover, when the color picture formation equipment (claim 2) of this invention specifies the combination of two or more color tone ready parameters, the contents of color adjustment can imagine it easily from a color mental parameter (sensuous language) by sensuous language defining the impression of the output image which changes with said combination as a color mental parameter. If a desired color mental parameter is specified, combination of the specified color mental parameter and two or more corresponding color tone ready parameters will be performed, and a desired output image will be obtained.

[0012] When separation of assignment of association of a color mental parameter or a color mental parameter is specified through association / separation assignment means, moreover, association / separation processing means When association of a color mental parameter is specified, the combination of two or more color tone ready parameters corresponding to two or more specified color mental parameters as one processor When make it join together, a storage means is made to memorize as a new

color mental parameter and separation of a color mental parameter is specified, a storage means is made to memorize the combination of the separated color mental parameter with the combination of two or more color tone ready parameters corresponding to it. By this, the edit of a user for itself is attained in a color mental parameter.

[0013] Moreover, in a study selection means, the color picture formation equipment (claim 3) of this invention takes the hysteresis of the color mental parameter specified in order to process the description data of an input image, and its input image, learns combination, and chooses a color mental parameter automatically with incorporation of an image. Moreover, if it specifies any of the color mental parameter memorized with the assignment means by the color mental parameter and storage means which were chosen with the study selection means they are, combination of the specified color mental parameter and two or more corresponding color tone ready parameters will be performed, and a desired output image will be obtained.

[0014]

[Example] Hereafter, one example of the color picture formation equipment of this invention is explained to a detail with reference to a drawing.

[0015] Drawing 1 shows the system block Fig. concerning the color picture formation equipment of this example, and assumes the digital compound machine of color correspondence as color picture formation equipment in this example. The digital compound machine means the system which added communication facility to the conventional digital color copying machine, and carried color facsimile equipment, large capacity storage, etc.

[0016] Here, the outline of the system of drawing 1 is explained. In the system bus 100 for performing delivery of a control signal or image data Images, such as a scanner, are used as digital data like illustration. Images, such as the image reader 101 for incorporating, and a printer The storage 104, such as the image display device 103 and hard disk which display and check images, such as the image output unit 102, a monitor, etc. which are outputted to the recording papers, such as paper and an OHP sheet, and a magneto-optic disk, the actuation and the input unit 105 which input and display processing directions and a setup to equipment, and each equipment Each equipment of external I/F109 for connecting external instruments, such as a communication device 108, a computer, etc. which bear connections with a communication network, such as the control device 106 to control, the image processing system 107 which processes and edits digital image data, and a sign, a decryption, is connected.

[0017] In addition, when the combination of two or more color tone ready parameters is specified, the color mental parameter which defined beforehand by sensuous language the impression of the output image which changes with said combination, and the combination of two or more of said color tone ready parameters are made to correspond, and are stored in storage 104.

[0018] Moreover, in this example, when the assignment means for specifying a color mental parameter and assignment of association of two or more color mental parameters, or one color mental parameter is defined as a combination of two or more color mental parameters in the image display device 103, and actuation and an input unit 105, it is used as an association / separation assignment means for specifying the separation.

[0019] Moreover, it is used as a color tone ready activation means to perform combination of two or more color tone ready parameters which correspond an image processing system 107 based on the specified color mental parameter.

[0020] In the above configuration, the actuation is explained in order of the processing in processing \*\* two or more output modes in the processing \*\* individual administration mode in the processing \*\* color mental parameter output mode in the processing \*\* color mental parameter learning mode in the processing \*\* color mental parameter association and separation mode in the approach \*\* color mental parameter mode of the definition of \*\* color mental parameter, and color tone ready processing.

[0021] \*\* With reference to approach drawing 2 and drawing 3 of the definition of a color mental parameter, and color tone ready processing, this invention explains especially the definition of an important color mental parameter and the approach of the color tone ready processing in an image

processing system 107.

[0022] A series of processings in which it helps to reach early are replaced with a color mental parameter here to a color setup of outputting [ which a user wishes ] in the language near human being's feeling. for example, "I wanting to take out a color more clearly", when a manuscript with a user is seen and it has the impression of "it being dark and not looking to advantage" -- "-- more -- \*\* -- I want to be light and to take out only in \*\*\*\* -- " -- \*\* -- said processing is desired -- I will come out. Then, the request of processing near such human being's sensibility is defined together with a series of complicated processings as a color mental parameter, and processing is chosen and processed with the property of an object image.

[0023] If the image with the impression of "it being dark and not looking to advantage" changes the RGB data into  $L^*a^*b^*$  of uniform color space CIELAB and it is plotted, it will become like the distribution 200 of drawing 2 (a) with lower lightness  $L^*$ , and low the distribution to which it solidified near  $L^*$  shaft, i.e., saturation. Then, in order to earn saturation, as shown in the distribution 201 of drawing 2 (b), the lightness of the lump of distribution 200 is left as it is, is extended in the saturation direction of  $a^*b^*$ , and takes out a color clearly. moreover, the processing distribution 200 is shifted [ processing ] in the direction of lightness like the distribution 202 of drawing 2 (c) in \*\* or \*\*\*\* -- respectively -- as a color mental parameter -- "-- vivid -- " -- "\*\*\* -- light -- " -- \*\* -- it defines by sensuous language to say, and a series of realizable processings (two or more color tone ready - parameters should put together) are made to correspond due to 1 to 1, and are stored in storage 104.

[0024] Drawing 3 is an outline flowchart which shows the approach of the color tone ready processing in an image processing system 107. An image processing system 107 will be changed into  $L^*a^*b^*$  of uniform color space CIELAB if RGB data are inputted (S301) (S302, S303).

[0025] Next, based on the color mental parameter specified by a user, a series of processings (two or more color tone ready parameters should put together) in which it corresponds from storage 104 are inputted, and these a series of processings are performed in the main processing section of color adjustment (S304). for example, a color mental parameter -- "-- vivid -- " -- it is -- a case performs actuation of expanding saturation in the main processing section -- moreover, a color mental parameter - - "\*\*\* -- light -- " -- it is -- a case performs function  $L^*=L^*+offset$  which shifts lightness in the main processing section. In addition, various functions, such as rotation of a hue, expansion compression, and migration, can give a definition easily. In addition, about the detail of the multipliers  $k$  and offset used by S304, it mentions later.

[0026] Then,  $L^*a^*b^*$  of the uniform color space CIELAB changed by S304 is changed into R'G'B' data (S305, S306). An image processing system 107 performs color tone ready processing based on a color mental parameter by the above-mentioned step.

[0027] \*\* Explain the contents of control of the control unit 106 when a user specifies a color mental parameter through actuation, an input unit 105, and an image display device 103 with reference to the flow chart of the processing in color mental parameter mode, next the processing in the color mental parameter mode of drawing 4 .

[0028] RGB of the target image is changed into  $L^*a^*b^*$  and statistics processing is performed (S401). In addition, although CIELAB space is taken up in this example, as long as it is three-dimension space, CIELUV, HLS space, etc. are sufficient.

[0029] As a result of statistics processing of S401, each maximum minimum value of  $L^*$ ,  $a^*$ , and  $b^*$ , an average value, etc. are computed, and these are extracted as description data of distribution (S402). Image:  $L2 \leq L^* \leq L3$ ,  $-a2 \leq a^* \leq a3$ ,  $-b2 \leq b^* \leq b3$  [0030] Next, since bounds, such as the multiplier  $k$  shown by drawing 3 , change with equipment to output, they choose an output unit (S403). Here, as an output unit, since the image display device 103 and the image output unit 102 are selectable, the values of a multiplier  $k$  differ [ this ] by to any two are outputted. That is, the color reproduction range has the large former, and since the latter is narrow, a multiplier  $k$  has a relation proportional to it. These range that can be taken is values which serve as known by the manufacturer side beforehand on the color correction of a system.

[0031] It is equipment when the output to the image output unit 102 is assumed in this example. : As it



is  $L0 \leq L^* \leq L1$ ,  $-a0 \leq a^* \leq a1$ , and  $-b0 \leq b^* \leq b1$  and being mentioned above each maximum minimum value of  $L^*$  from the description data of distribution,  $a^*$ , and  $b^*$  --  $L2 \leq L^* \leq L3$ ,  $-a2 \leq a^* \leq a3$ , and  $-b2 \leq b^* \leq b3$  it is -- since -- As shown in drawing 5, a multiplier  $k$  is  $k = \max(a0, a1, b0, b1) / \max(a2, a3, b2, b3)$  as an example.

It defines.

[0032] It is offset= $L2$  as a lightness shift shows to drawing 6. The said definition is beforehand registered into storage 104 (storage).

[0033] Next, if the color mental parameter memorized by storage 104 is displayed on an image processing system 107 (S404) and a user chooses a desired color mental parameter through actuation and an input unit 105 (S405), the description data will be performed for the color tone ready processing defined with the color mental parameter with an image processing system 107 on a radical (S406). Although it depends on the method [ how many multipliers of the main processing section of an image processing system 107 are shaken at this time ] of a definition, there is also an approach as which a user makes this swing width of face input or choose it. This is processing which displays the description data of the distribution extracted by S402 on an image display device 103, displays the description data of the distribution to which processing is urged on an image display device 103 in the step of the processing based on the description data after choosing a color mental parameter, and entrusts with the task of a user the parameter in the main processing section.

[0034] The output in S407 is an output process to the equipment through the communication link by the image display device 103 which is the output destination change where the processing image was chosen, the image output unit 102, storage 104, and the communication device 108, or external I/F. It is also possible to perform the usual color processing before and after processing according to color mental parameter mode with a natural thing.

[0035] By the above-mentioned processing, by choosing directly the color mental parameter transposed to sensuous language, a user can take the side of a color device, can eliminate a complicated setup of color tone ready processing of a thing, and can get the image according to liking quickly.

[0036] \*\* Processing drawing 7 in color mental parameter association and separation mode shows the flow chart of the processing in color mental parameter association and separation mode. the color mental parameter defined as color mental parameter association and separation mode -- it is -- for example, "\*\*\* -- light -- " -- "-- vivid -- " -- it is used frequently, and two or more color mental parameters are chosen newly to set up at once, and an identifier [ finishing / a definition of a library-name ] is not overlapped -- as -- "-- fascinating -- " -- \*\* -- the said condition is named and it registers in register mode. [ many ] moreover, saying [ separation ] -- the inside of a color mental parameter -- the main processing section of drawing 3 -- "-- vivid -- " -- there are some which defined two or more types concerning  $a^*b^*$  like. It is chosen to set this up independently. An equation-which-is-separable voice input is processing about the classifying [ into grades ] method of [ formulas / upper 2 ] 1 set in 1 set and bottom 2 formula, when two or more types are three or more formulas and it divides into two.

[0037] A control unit 106 will perform processing of drawing 7, if the predetermined key (not shown) of actuation and an input unit 105 is pressed and color mental parameter association and separation mode are specified. First, selection of the chart example, joint processing, and separation processing of the color mental parameter memorized by storage 104 to an image display device 103 is urged (S701). If a user chooses processing through actuation and an input unit 105, it judges whether it is joint processing (S702), and if it is joint processing, selection of the color mental parameter to combine will be urged and two or more color mental parameters will be inputted (S703). Next, the input of the identifier of the newly registered color mental parameter is urged, a color mental parameter is defined as inputting an identifier through actuation and an input unit 105 by the new identifier, the processor of the color mental parameter chosen by S703 is combined, and it is made to memorize to storage 104 (S705). (S704)

[0038] If selection of the color mental parameter to separate is inputted (S706), and it is disengageable, and judges whether it is \*\*\*\*\* (S707) and is disengageable on the other hand when it is not joint processing, the identifier (newly registered identifier) of each separated color mental parameter will be

inputted (S708), then equation-which-is-separable voice will be inputted (S709). Then, a new identifier defines a color mental parameter, a processor is separated based on equation-which-is-separable voice, and it is made to memorize to storage 104 by S705.

[0039] By the above-mentioned processing, the color mental parameter beforehand registered into storage 104 can be edited into itself. When using frequently the processing covered several times over, processing becomes possible by one assignment by association. Moreover, warm processing can also be chosen according to separation.

[0040] \*\* Processing drawing 8 in color mental parameter learning mode shows the flow chart of the processing in color mental parameter learning mode. color mental parameter learning mode -- beforehand -- a color mental parameter -- priority -- attaching -- registering -- in addition -- and it is the mode in which memorize the description data of an image, and the hysteresis of a color mental parameter to storage 104 at the time of color mental parameter mode, and it enables it for this to perform assignment and processing of the processing used frequently to automatic from the relation between a color mental parameter and an image. In addition, as for color mental parameter learning mode, turning on and off in the mode shall be specified by a user's selection through actuation and an input unit 105.

[0041] When color mental parameter learning mode is specified, a control unit 106 performs processing shown in drawing 8. In addition, the flow chart of drawing 8 is fundamentally the same as the flow chart in processing in the color mental parameter mode of drawing 4, and the same sign explains only a different part here in order to show common processing.

[0042] When statistics processing, extract of the description data of distribution, and selection (S401-S403) of an output unit are performed, a control unit 106 The priority of the color mental parameter memorized by storage 104, Based on the description data of an image and the hysteresis of a color mental parameter in old color mental parameter mode, the color mental parameter assumed to be the most suitable as color tone ready processing of the corresponding image as a recommendation color mental parameter It displays on an image display device 103, and color adjustment with this recommendation color mental parameter is performed automatically (S801).

[0043] Then, input whether the color adjustment with this recommendation color mental parameter is sufficient through actuation and an input unit 105, and if it is O.K. (good) After performing the output to the output destination change chosen by S407, it holds to storage 104 by making the description data and the selected color mental parameter into hysteresis (S803). The operating frequency for every description data to each color mental parameter memorized by the store 104 is computed, the priority of a color mental parameter is updated (S804), and processing is ended.

[0044] On the other hand, if it progresses to S404-S406, the color mental parameter memorized by storage 104 is displayed on an image processing system 107 and a user chooses a desired color mental parameter through actuation and an input unit 105 in S802 in not being O.K., the description data will be performed for the color tone ready processing defined with the color mental parameter with an image processing system 107 on a radical.

[0045] As mentioned above, by holding the hysteresis of the selected color mental parameter, learning, and going together with the description data of the image to capture, the processing to a similar image can be processed automatically and increase in efficiency can be attained.

[0046] \*\* In processing this example in color mental parameter output mode, by specifying color mental parameter output mode through actuation and an input unit 105, shave some output images and carry out the line output of the list of the multipliers used for the color mental parameter chosen at the time of an output, the description data of an image, and processing at the lower part in a printing area of equipment.

[0047] Drawing 9 shows the flow chart of the processing in color mental parameter output mode, and when color mental parameter output mode is specified, a control unit 106 eliminates the lower part of an output image (S901), performs line embedding (image composition) of a color mental parameter, the description data, and other processing parameters (S902), and is made to transmit and output to an output unit through an image processing system 107 (S903).

[0048] It can know clearly what kind of processing by the above-mentioned processing, since a setting

list was checked when an output image is obtained from the input image of arbitration, was performed to the corresponding input image.

[0049] Moreover, as color mental parameter output mode, as shown in drawing 10, the output configuration of a color mental parameter is chosen with a line and a rectangle (S1001). Next, perform embedding tab control specification (S1002), and the image of the specified field is eliminated (S1003). Embedding (image composition) of a color mental parameter, the description data, and other processing parameters can be performed (S1004), and the output which made effect by shaving an output image small by what you transmit to an output unit and is made to output to it (S1005) can also be obtained.

[0050] If it puts in another way, an important parameter can be outputted without deleting the important part of an output image. Moreover, in this equipment, if an output date, an output person's initial, etc. are set up and it is made to output, it will become easy to carry out distinction and classification of an output image.

[0051] \*\* In the processing and this example in individual administration mode, by specifying individual administration mode through actuation and an input unit 105, the new registration by association and separation of a color mental parameter, a setup of the recommendation color mental parameter to an image, etc. can store data in an individual, or a color mental parameter can be built so that often [ an individual ].

[0052] The flow chart of processing is shown in drawing 11. In addition, this flow chart is inserted in drawing 7 and the head part of 8. When individual humanity news is inputted (S1101) and collating is in agreement (S1102), color mental parameter association and separation mode of drawing 7, and color mental parameter learning mode of drawing 8 are performed, and the registration, and the hysteresis and study at that time are memorized in the information area of the individual of storage 104.

[0053] \*\* When there are two or more color mental parameters to try to 1 output image by specifying two or more output modes through actuation and an input unit 105 in the processing and this example in two or more output modes, or when it does not know whether outputting [ which he wishes by one setup ] is obtained, some output images can be cut down, it can process with two or more candidates' parameter for every cut-down image, and a list output can carry out.

[0054] Drawing 12 shows the flow chart of the processing in two or more output modes, and if two or more output modes are specified, a control unit 106 will input assignment of a logging field, after reading an image with the image reader 101 (S1201) (S1202). The assignment input of this logging field may be made to perform a coordinate input using an editor etc., or it may be made to perform a coordinate input through the ten key of actuation and an input unit 105.

[0055] If assignment of a logging field is inputted, the logging field specified from the read image will be started (S1203), the description data of distribution will be extracted (S1204), statistics processing will be performed (S1205), and selection of an output unit will be inputted (S1206).

[0056] Then, assignment of the number of coma and assignment of pagination are inputted (S1207, S1208). In addition, the number of coma here is assignment of how many images to arrange to 1 page, and automatic calculation of the scale factor of zooming is carried out after assignment of pagination based on the number of coma, and pagination (S1209).

[0057] Selection of the color mental parameter for several coma minutes is inputted (S1210). For every coma next, with a color mental parameter and the description data Color tone ready processing is performed (S1211), and coma embedding (image composition to the image location according to the number of coma) including an unsettled image is performed (S1212), then embedding, such as a color mental parameter, is performed in the coma lower part (S1213), and it outputs to it (S1214).

[0058] By the above-mentioned processing, when processing cannot be chosen exactly, the same recording paper or two or more recording papers are made to represent some images, and the image processed variously is outputted, and after checking the color mental parameter for which it was suitable from the output, it can choose.

[0059]

[Effect of the Invention] As explained above, the color picture formation equipment (claim 1) of this invention The color mental parameter which defined by sensuous language the impression of the output

image which changes with said combination when the combination of two or more color tone ready parameters was specified, The storage means which the combination of two or more of said color tone ready parameters was made to correspond, and memorized it, Since it had a color tone ready activation means to perform combination of two or more color tone ready parameters memorized by the color mental parameter specified with the assignment means and said assignment means for specifying said color mental parameter, and said storage means to correspond, While losing a complicated setup of color adjustment, improving user-friendliness and enabling it to set up quickly, it can make it possible to obtain a favorite image simply at the time of color adjustment, as change of a color tone ready backward output image can be imagined easily.

[0060] Moreover, the color picture formation equipment (claim 2) of this invention The color mental parameter which defined by sensuous language the impression of the output image which changes with said combination when the combination of two or more color tone ready parameters was specified, A storage means to make the combination of two or more of said color tone ready parameters correspond, and to memorize it, A color tone ready activation means to perform combination of two or more color tone ready parameters memorized by the color mental parameter specified with the assignment means and said assignment means for specifying said color mental parameter, and said storage means to correspond, Assignment of association of two or more color mental parameters memorized by said storage means or one color mental parameter as a combination of two or more color mental parameters Association / separation assignment means for specifying the separation, when defining, When association of a color mental parameter is specified through said association / separation assignment means, the combination of two or more color tone ready parameters corresponding to two or more specified color mental parameters as one processor When make it join together, said storage means is made to memorize as a new color mental parameter and separation of a color mental parameter is specified, the combination of the separated color mental parameter with the combination of two or more color tone ready parameters corresponding to it Since it had association / separation processing means which said storage means is made to memorize, while losing a complicated setup of color adjustment, improving user-friendliness and enabling it to set up quickly As change of a color tone ready backward output image can be imagined easily, it can make it possible to obtain a favorite image simply at the time of color adjustment. Moreover, since a color mental parameter can be edited into itself, when using frequently the processing covered several times over, processing becomes possible by one assignment by association. Moreover, warm processing can also be chosen according to separation.

[0061] Moreover, the color picture formation equipment (claim 3) of this invention The color mental parameter which defined by sensuous language the impression of the output image which changes with said combination when the combination of two or more color tone ready parameters was specified, The storage means which the combination of two or more of said color tone ready parameters was made to correspond, and memorized it, The study selection means which takes the hysteresis of the color mental parameter specified in order to process the description data of an input image, and its input image, learns combination, and chooses a color mental parameter automatically with incorporation of an image, The assignment means for specifying any of the color mental parameter memorized by the color mental parameter chosen with said study selection means, and said storage means they are, Since it had a color tone ready activation means to perform combination of two or more color tone ready parameters memorized by the color mental parameter specified with said assignment means, and said storage means to correspond, While losing a complicated setup of color adjustment, improving user-friendliness and enabling it to set up quickly, it can make it possible to obtain a favorite image simply at the time of color adjustment, as change of a color tone ready backward output image can be imagined easily. Moreover, by holding the hysteresis of the selected color mental parameter, learning, and going together with the description data of the image to capture, the processing to a similar image can be processed automatically and increase in efficiency can be attained.

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[Translation done.]

**\* NOTICES \***

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- 2.\*\*\*\* shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

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**DESCRIPTION OF DRAWINGS**

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**[Brief Description of the Drawings]**

[Drawing 1] It is a system block Fig. concerning the color picture formation equipment of this example.

[Drawing 2] It is an explanatory view to show the definition of a color mental parameter.

[Drawing 3] It is the outline flowchart of the color tone ready processing in an image processing system.

[Drawing 4] It is the flow chart of the processing in color mental parameter mode.

[Drawing 5] It is the explanatory view showing the example of the multiplier k in color adjustment.

[Drawing 6] It is the explanatory view showing the example of offset in a lightness shift.

[Drawing 7] It is the flow chart of the processing in color mental parameter association and separation mode.

[Drawing 8] It is the flow chart of the processing in color mental parameter learning mode.

[Drawing 9] It is the flow chart of the processing in color mental parameter output mode.

[Drawing 10] They are other examples of the processing in color mental parameter output mode.

[Drawing 11] It is the flow chart of the processing in individual administration mode.

[Drawing 12] It is the flow chart of the processing in two or more output modes.

**[Description of Notations]**

100 System Bus

101 Image Reader

102 Image Output Unit

103 Image Display Device

104 Storage

105 Actuation and Input Unit

106 Control Unit

107 Image Processing System

108 Communication Device

109 External I/F

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[Translation done.]

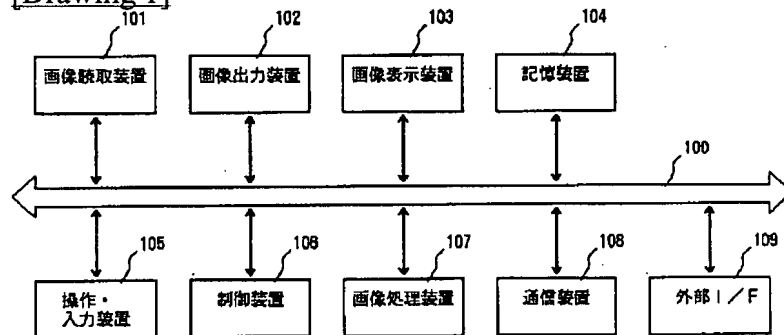
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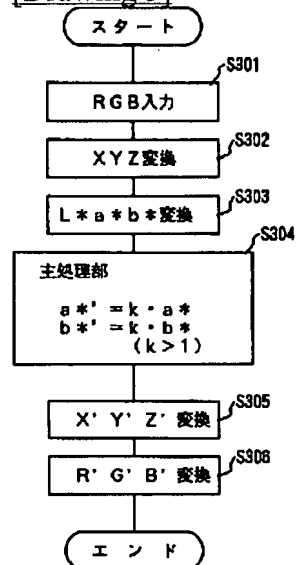
1. This document has been translated by computer. So the translation may not reflect the original precisely.
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## DRAWINGS

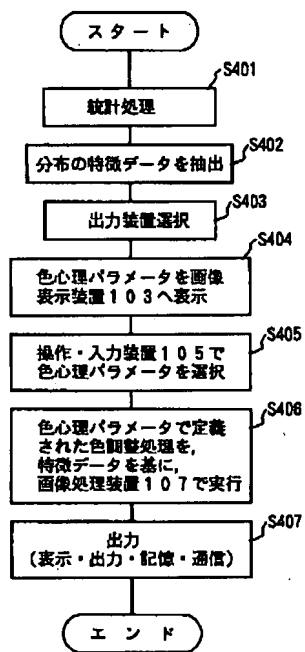
[Drawing 1]



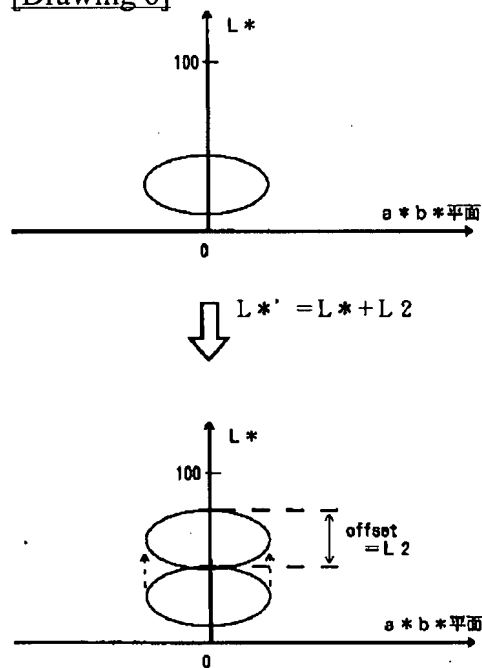
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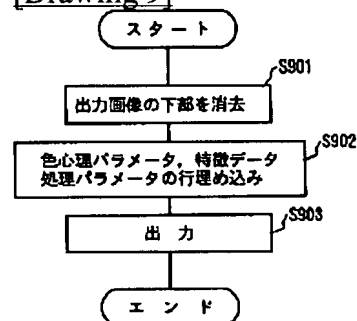
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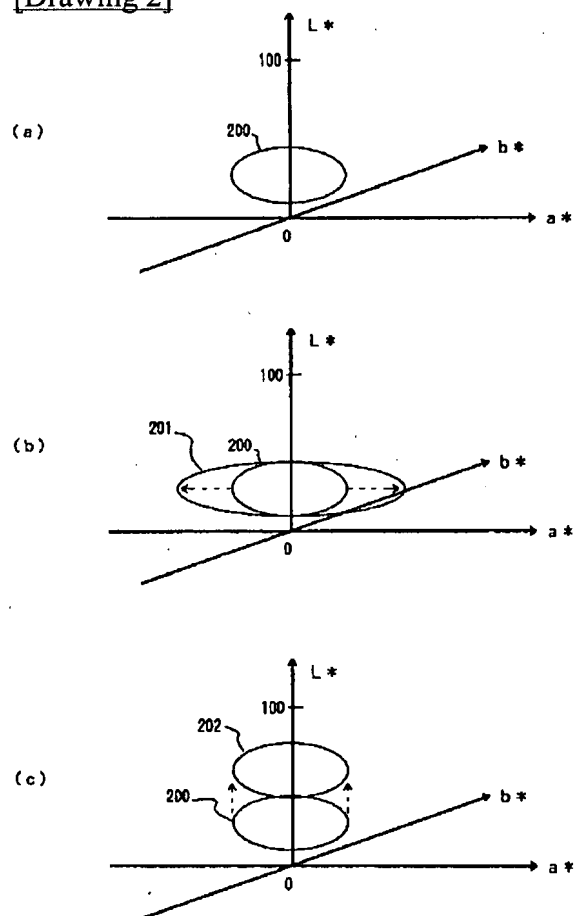
[Drawing 6]



[Drawing 9]

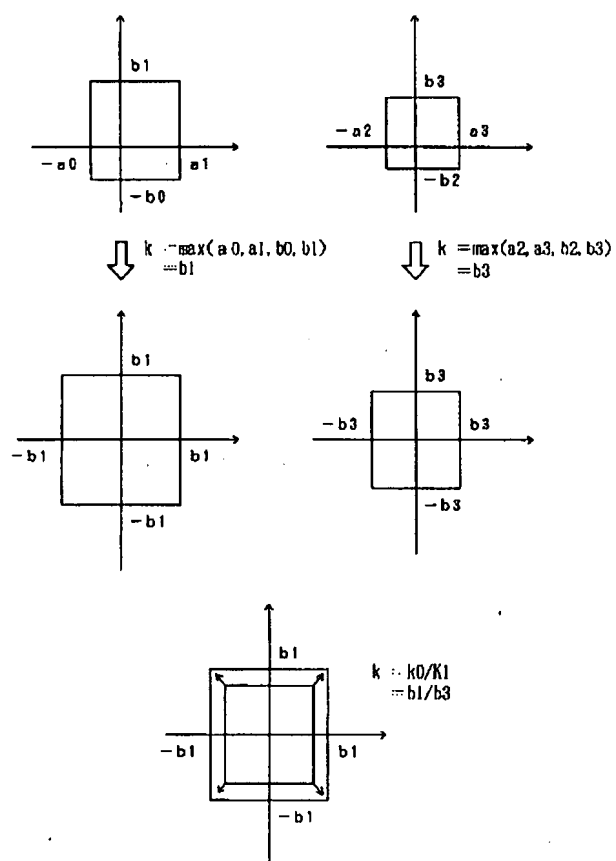


[Drawing 2]

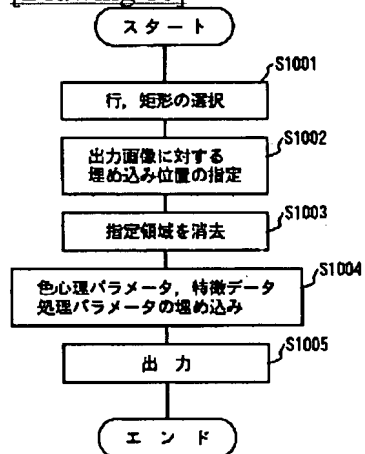


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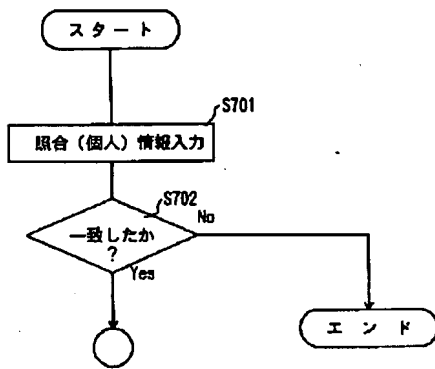




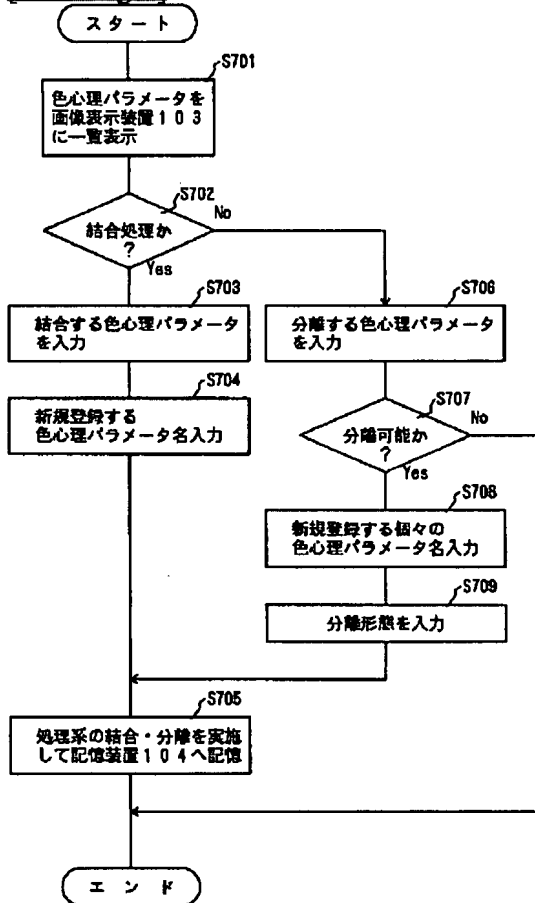
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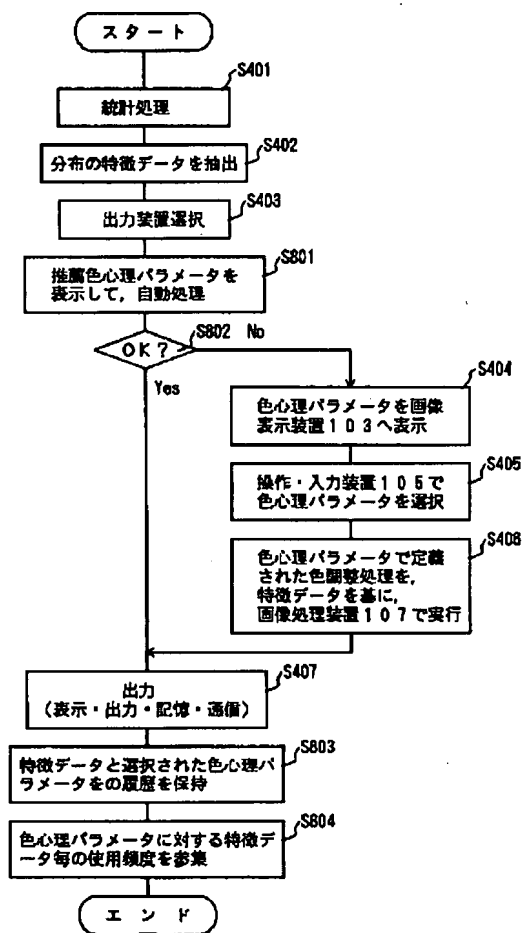
[Drawing 11]

図7または図8の  
フローチャートへ

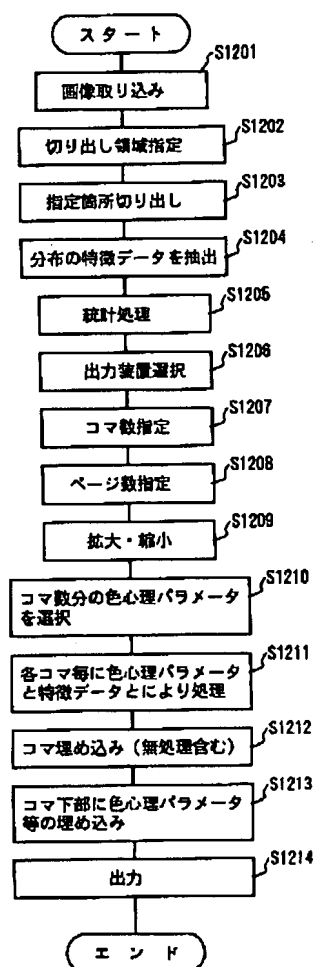
[Drawing 7]



[Drawing 8]



[Drawing 12]



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[Translation done.]